# ENERGY STAR® Program Requirements for Residential Air-Source Heat Pumps (ASHPs) and Central Air Conditioners

## Partner Commitments

### Commitment

The following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacturing of ENERGY STAR qualified residential ASHPs and central air conditioners. The ENERGY STAR Partner must adhere to the following program requirements:

- comply with current ENERGY STAR Eligibility Criteria, defining the performance criteria that must be met for use of the ENERGY STAR certification mark on residential ASHPs and central air conditioners and specifying the testing criteria for residential ASHPs and central air conditioners. EPA may, at its discretion, conduct tests on products that are referred to as ENERGY STAR qualified. These products may be obtained on the open market, or voluntarily supplied by Partner at EPA's request;

- comply with current ENERGY STAR Logo Use Guidelines, describing how the ENERGY STAR labels and name may be used. Partner is responsible for adhering to these guidelines and for ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance;

- qualify at least one ENERGY STAR labeled residential ASHP or central air conditioner model within one year of activating the residential ASHPs and central air conditioners portion of the agreement. When Partner qualifies the product, it must meet the specification (e.g., Tier 1 or 2) in effect at that time;

- provide clear and consistent labeling of ENERGY STAR qualified residential ASHPs and central air conditioners. The ENERGY STAR label must be clearly displayed in product literature (i.e., user manuals, spec sheets, etc.) and on the manufacturer's Internet site where information about ENERGY STAR qualified models is displayed. It is also recommended that the label appear on the top/front of the product and on the product packaging;

- offer and encourage training to distributors and/or contractors on the following issues: air distribution issues and their effect on equipment performance, refrigerant charging, proper installation of registers, duct work, and plenum to ensure low leakage and to meet insulation requirements, and proper use of the Manual J calculation, or other equivalent calculation, in order to encourage proper sizing of equipment;

- provide to EPA, on an annual basis, an updated list of ENERGY STAR qualifying residential ASHP and central air conditioner models. Once the Partner submits its first list of ENERGY STAR labeled residential ASHP and central air conditioner models, the Partner will be listed as an ENERGY STAR Partner. Partner must provide annual updates in order to remain on the list of participating product manufacturers;

- provide to EPA, on an annual basis, unit shipment data or other market indicators to assist in determining the market penetration of ENERGY STAR. Specifically, Partner must submit the total number of ENERGY STAR qualified residential ASHPs and central air conditioners shipped (in units by model) or an equivalent measurement as agreed to in advance by EPA and Partner. Partner is also encouraged to provide ENERGY STAR qualified unit shipment data segmented by meaningful

product characteristics (e.g., capacity, size, speed, or other as relevant), total unit shipments for each model in its product line, and percent of total unit shipments that qualify as ENERGY STAR. The data for each calendar year should be submitted to EPA, preferably in electronic format, no later than the following March and may be provided directly from the Partner or through a third party. The data will be used by EPA only for program evaluation purposes and will be closely controlled. If requested under the Freedom of Information Act (FOIA), EPA will argue that the data is exempt. Any information used will be masked by EPA so as to protect the confidentiality of the Partner;

- notify EPA of a change in the designated responsible party or contacts for residential ASHPs and central air conditioners within 30 days.

## Performance for Special Distinction

In order to receive additional recognition and/or support from EPA for its efforts within the Partnership, the ENERGY STAR Partner may consider the following voluntary measures and should keep EPA informed on the progress of these efforts:

- consider energy efficiency improvements in company facilities and pursue the ENERGY STAR label for buildings;

- purchase ENERGY STAR labeled products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR labeled product information to employees for use when purchasing products for their homes;

- ensure the power management feature is enabled on all ENERGY STAR qualified monitors in use in company facilities, particularly upon installation and after service is performed;

- provide general information about the ENERGY STAR program to employees whose jobs are relevant to the development, marketing, sales, and service of current ENERGY STAR labeled product models;

- feature the ENERGY STAR label(s) on Partner Web site and in other promotional materials. If information concerning ENERGY STAR is provided on the Partner Web site as specified by the ENERGY STAR Web Linking Policy (this document can be found in the Partner Resources section on the ENERGY STAR Web site at www.energystar.gov), EPA may provide links where appropriate to the Partner Web site;

- provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the program requirements listed above. By doing so, EPA may be able to coordinate, communicate, and/or promote Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR Web pages, etc. The plan may be as simple as providing a list of planned activities or planned milestones that Partner would like EPA to be aware of. For example, activities may include: (1) increase the availability of ENERGY STAR labeled products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrate the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) provide information to users (via the Web site and user's manual) about energy-saving features and operating characteristics of ENERGY STAR qualified products; and (4) build awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event;

- provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and its message.

# ENERGY STAR® Program Requirements for Residential Air-Source Heat Pumps (ASHPs) and Central Air Conditioners

## Eligibility Criteria

Below is the product specification (Version 3.0) for ENERGY STAR qualified residential ASHPs and central air conditioners. A product must meet all of the identified criteria if it is to be labeled as ENERGY STAR by its manufacturer.

1) Definitions: Below are brief descriptions of residential ASHPs and central air conditioners and other terms as relevant to ENERGY STAR.

   A. Air-Source Heat Pump (ASHP): An air-source unitary heat pump model consists of one or more factory-made assemblies which normally include an indoor conditioning coil(s), compressor(s), and outdoor coil(s), including means to provide a heating function. ASHPs shall provide the function of air heating with controlled temperature, and may include the functions of air-cooling, air-circulation, air-cleaning, dehumidifying or humidifying.

   B. Central Air Conditioner: A central air conditioner model consists of one or more factory-made assemblies which normally include an evaporator or cooling coil(s), compressor(s), and condenser(s). Central air conditioners provide the function of air-cooling, and may include the functions of air-circulation, air-cleaning, dehumidifying or humidifying.

   C. Single Package: A single package unit is an ASHP or central air conditioner that combines both condenser and air handling capabilities in a single casing. Air is treated at a central location and carried to and from the rooms in a house by one or more fans and a system of ducts.

   D. Split System: A split system is an ASHP or central air conditioner with separate indoor (evaporator) and outdoor (condenser) units. Air is treated at a central location and carried to and from the rooms in a house by one or more fans and a system of ducts. For split systems, the energy-efficiency ratings of a particular split system model are based on one of the following: 1) the condenser-evaporator combination that is the partner's most commonly sold combination for that condenser, or 2) the actual condenser-evaporator coil combination of the split system model.

   E. Gas/Electric Package Unit: A single package unit with gas heating and electric air conditioning that is often installed on a slab or a roof. Air is treated at a central location and carried to and from the rooms in a house by one or more fans and a system of ducts.

   F. Heating Seasonal Performance Factor (HSPF): This is a measure of a heat pump's energy efficiency over one heating season. It represents the total heating output of a heat pump (including supplementary electric heat) during the normal heating season (in Btu) as compared to the total electricity consumed (in watt-hours) during the same period. HSPF is based on tests performed in accordance with ARI 210/240.

   G. Seasonal Energy Efficiency Ratio (SEER): This is a measure of equipment energy efficiency over the cooling season. It represents the total cooling of a central air conditioner or heat pump (in Btu) during the normal cooling season as compared to the total electric energy input (in watt-hours) consumed during the same period. SEER is based on tests performed in accordance with ARI 210/240.

   H. Energy Efficiency Ratio (EER): This is a measure of the instantaneous energy efficiency of cooling equipment. EER is the steady-state rate of heat energy removal (e.g., cooling capacity) by the equipment in Btuh divided by the steady-state rate of energy input to the equipment in watts. This ratio is expressed in Btuh per watt (Btuh/watt). EER is based on tests performed in

accordance with ARI 210/240.

2) Qualifying Products:

   A. ASHPs: This agreement shall cover residential ASHPs that are rated below 65,000 Btuh and powered by single-phase current. The ASHP may be a single packaged system, where there is only one assembly, or a split system where there are two. If such equipment is provided in more than one assembly, matched assemblies shall be used in meeting the specifications outlined in Section 3 below.

   B. Central Air Conditioners: This agreement shall cover residential central air conditioners that are rated below 65,000 Btuh, and powered by single-phase current. The central air conditioner may be a single packaged system, where there is only one assembly, or a split system where there are two. If such equipment is provided in more than one assembly, matched assemblies shall be used in meeting the specifications outlined in Section 3 below.

   C. Gas/Electric Package Units: This agreement shall cover gas/electric package units that are rated below 65,000 Btuh. To qualify for the ENERGY STAR label, they must meet the cooling portion of the single package specification outlined in Section 3 below.

3) Energy-Efficiency Specifications for Qualifying Products: Only those products listed in Section 2 that meet the criteria below may qualify as ENERGY STAR. Partner shall include a manufacturer limited warranty with its qualified residential ASHP, central air conditioner, and gas/electric models.

***Table 1: Energy-Efficiency Criteria for ENERGY STAR Qualified Residential ASHPs and Central Air Conditioners***

| Product Type | SEER | EER | HSPF (for heat pumps only) |
|---|---|---|---|
| Split Systems | ≥ 13 | ≥ 11 | ≥ 8.0 |
| Single Package Equipment (including gas/electric package units) | ≥ 12 | ≥ 10.5 | ≥ 7.6 |

4) Test Criteria: Manufacturers are required to perform tests and self-certify those product models that meet the ENERGY STAR guidelines. Partner agrees to perform energy-efficiency tests for residential ASHPs, central air conditioners, and gas/electric package units under rating conditions in accordance with ARI 210/240. For EER, manufacturers agree to perform energy-efficiency tests based on ARI Standard 210/240-94, Operating Condition A: 95°F outdoor air temperature, 80°F dry bulb/67°F wet bulb indoor coil air entering conditions. For split systems, the energy-efficiency ratings of a particular model shall be based on one of the following: 1) the condenser-evaporator combination that is the partner's most commonly sold combination for that condenser, or 2) the actual condenser-evaporator coil combination of the split system model.

   The HSPF and SEER ratings shall be identical to the levels reported on the Federal Trade Commission (FTC) Energy Guide Label.

5) Effective Date: The date that manufacturers may begin to qualify products as ENERGY STAR will be defined as the *effective date* of the agreement. The ENERGY STAR Residential ASHP and Central Air Conditioner specification Version 3.0 is effective **October 1, 2002**. Any previously executed agreement on the subject of ENERGY STAR labeled residential ASHP and central air conditioners shall be terminated effective September 30, 2002.

6) Future Specification Revisions: ENERGY STAR reserves the right to change the specification should

technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through industry/stakeholder discussions.

In the future, ENERGY STAR anticipates that several aspects of the specification will be examined to determine if any changes are appropriate, including the following:

- increasing ENERGY STAR levels for single package units to 13 SEER and 11 EER;
- increasing the specification level for heat pumps across the board to 8.0 HSPF;
- explicitly including mini-split systems; and
- addressing installation and charging issues in the form of requirements for thermal expansion valves or equivalent and diagnostic lights indicating the need for service.